

R10 Inventors Grab Attention of the Water World

Andy Hess and **Doc Thompson** invented a simple but effective holding tool for collecting water samples from shallow pools in underground injection wells. Their device uses disposable bottles, which eliminates the need to decontaminate equipment between samples. It allows for the collection of volatile contaminants, which is a priority, and saves time and money.

(See below for a complete project summary)



Above: Swing Sampler. A common sampling device which is too short and allows sediment to intrude into the sample being collected

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The challenge was getting representative samples from injection wells which averaged 35 feet below surface with a typical water depth of only 2-6 inches. The samples were to be analyzed for several parameters including volatiles.

One common option is to use a peristaltic pump, but these pumps are only able to pull water up from a depth of 24 feet. They are also not preferable when analyzing for volatiles since volatiles are lost by this sampling process.

That leaves using a grab sampling device. There are only two devices readily available that could potentially work. The first is called a "Swing Sampler" which holds a sample jar and is attached to a long pole. A 40-plus foot pole would be too awkward and heavy. Also, when lowered, the jar is upright, which would require pushing the bottom of the jar into the sediment below the sample water source in order to tilt the jar so that water could enter it. Since it is necessary to minimize the sediment intrusion into the water sample, this technique would be a problem.

The second grab-type device is called a horizontal Van Dorn bottle, and costs about \$350-\$400. The main disadvantage of this device, besides the cost, was the need to decontaminate it between sites. This would not only require additional time, but would generate solvent and acid hazardous waste.

Most field people have found the best sample solution is to use a relatively inexpensive disposable sampling device. Pre-cleaned sample jars are ideal since they are cheap, (\$3-5 each depending on size) and come with a certificate of cleanliness.

The device Andy and Doc invented met three important objectives: 1) it utilizes a disposable pre-cleaned sample jar; 2) it can collect an undisturbed representative sample of shallow surface water (2"-6") at 40+ feet depth from grade suitable for all analyses needed; and 3) it is inexpensive (less than \$5) and can save the agency hundreds of dollars each year.